

THE FOUNDATIONS OF
WISDOM

VOLUME 1

LOGIC
STUDY GUIDE

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LOGIC STUDY GUIDE

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Introduction

THIS IS A STUDY GUIDE to accompany volume 1 of *The Foundations of Wisdom: Logic*. In this study guide, I will explain the overall structure of volume 1 and how to read the text of volume 1. I will also include essential chapter-by-chapter questions you should be asking and answering as you read through the text. Finally, I will include exercises to assist you in practicing and using the tools you should have acquired while reading this text.

The Need for a Teacher

The first thing you should know about how to read this book is that you need a teacher to read it well. No book, no matter how well-written, is sufficient as a guide for the life of the mind. This is even truer in the case of matters which are difficult to learn. The reason for this is obvious: you can't ask a book questions (and if you do, don't expect the book to answer!). The number of potential questions which may arise in the mind of a student is practically limitless, and no book can anticipate all of them, and even if it did, the book would be so cumbersome and large that it would be useless as a tool for teaching. A good teacher will be able to answer many, if not all, of the questions any given student might ask about the content of the book.

Secondly, a teacher is one who knows what the student does not, and therefore, the teacher can do what no book can do: he can propose new words to express the same concepts. If a student finds certain words or statements in this book to be unfamiliar or obscure, a teacher who knows what the book is asserting can propose alternative words which are more familiar to the student and easier for him to understand.

Finally, every book written about any subject matter presupposes that a student already knows certain truths and has certain experiences. For example, a book on biology presupposes that the student has experience with living things such as plants and animals. Logic is no different. But it may happen that a student is lacking one or more of the basic experiences or foundational truths presupposed by this book. In that case, a teacher can help supply the missing elements in the student's formation (for example, by giving reasons for the truths presupposed to what is asserted in the book).

For these reasons, as well as some others, I strongly recommend that in addition to reading the *Logic* book and this accompanying study guide, try to find someone who already knows this subject matter well who can fulfill the role of a teacher.

The Overall Plan of the Logic Book

Logic is an art. When we say logic is an art, we don't mean one of the fine arts like painting or sculpture. That is the sense of the word "art" most familiar to modern students. Instead, when we say that logic is an art, we mean a kind of correct or right knowledge about things to be made. In this

sense, any practical knowledge about things to be made can be called an art. Farming, carpentry, architecture, boat-making, and medicine are all examples of art in this broader sense. Taken in this sense, every art aims at some good. Farming aims at producing an abundance of nutritious food; architecture aims at producing safe and beautiful buildings for shelter; medicine aims at producing health, and so on.

Logic also aims at some good: truth.

And just as every art produces tools to more easily acquire the good it aims at, so too does logic. The art of agriculture makes tools like plows and sprinklers to more effectively grow an abundance of food. The art of carpentry makes hammers and nails and saws to more effectively produce wooden items like chairs and beds. The art of medicine makes and uses stethoscopes and medicines to more effectively produce health. Logic also makes tools for the mind to use in order to more effectively arrive at truth. These tools include definitions, statements, and arguments. Without these tools, we cannot reason well, especially about difficult matters.

Since the aim of this book is to give the reader some proficiency in the art of reasoning well, and since reasoning well requires that we can argue to true conclusions, this means that the student must be equipped to construct good arguments which conclude necessarily to true conclusions. Therefore, this book equips the student to make each step on the way to that end, and it also equips the student with the tools necessary to reason to truth.

The first six chapters of the book covers introductory principles such as the nature and purpose of philosophy in general and logic in particular. Chapter 7 considers the art of defining and teaches the student how to make and use the tool of definition; definitions are necessary since the meaning of the words in any given statement must be known before a judgment can be made about the truth of that statement. Chapter 8 considers the art of constructing true and necessary statements. These statements are also tools used by reason since they are required to express truth and also as premises for a good argument. Chapters 9 and 10 teach the student how to make and use the tool called argument, and especially syllogisms, which are the best kind of argument. Chapter 9 considers the valid forms of a syllogism and distinguishes them from invalid forms, since even true and necessary premises will only conclude to a true and necessary conclusion if the form of the argument is valid. Finally, chapter 10 teaches the student how to assemble the appropriate premises into a valid syllogism which concludes necessarily to a true statement (the conclusion). This kind of argument, called demonstration, is the most powerful tool of reason.

In summary, the overall plan of the book is as follows:

- Chapters 1-6: Principles of Philosophy and Logic
- Chapter 7: Making and using definitions
- Chapter 8: Making and using statements
- Chapters 9-10: Making and using arguments, especially syllogisms

Using Supplementary Texts

Some chapters refer the student to supplementary texts in the footnotes. These texts are, for the most part, original texts of great thinkers. Depending upon the abilities of the teacher and students, as well as upon the time you have to complete the course, these supplementary texts can be very helpful to examine a subject in greater detail. If the teacher is very knowledgeable and familiar with the supplementary text, and the students are more advanced, these texts will be very helpful for increasing the student's knowledge of logic. However, the course can be completed without reading the supplementary texts. They are options for those who desire to use them.

How Much Reading and Study Time Should Be Devoted to Each Part?

The time needed to cover the materials in this book is the sum of the time it takes to

1. read the book,
2. cover the material in class, and
3. do the exercises recommended by the book.

The amount of time it should take a student to read the book carefully is approximately five to ten hours. The amount of class time to cover the contents of this book should total to somewhere between fifty and sixty-five hours. Finally, the minimum amount of time needed to perform the recommended exercises in both the study guide and the book should be no less than twenty-five hours. So a student should expect that the total amount of time necessary to cover the entire contents of the *Logic* book with this accompanying study guide will be between eighty and one hundred hours.

As a ballpark figure, chapters 1-6 should take approximately twenty to twenty-five hours; chapter 7 should take approximately twenty to twenty-five hours; chapter 8 should take approximately five to ten hours; and chapters 9-10 should take approximately thirty-five to forty hours.

These are simply estimates based upon my experience teaching this material. There may be reasons or circumstances why a particular student might use significantly more time than what is recommended here, but it would be unusual that a student would need significantly less time than the seventy-five to ninety hours recommended here.

List of Important Definitions for Logic

THE FOLLOWING DEFINITIONS ARE IMPORTANT for understanding the *Logic* text. Because definitions are the seeds of all of our knowledge and are presupposed to everything else we can know, the student should memorize all of these definitions.

The best way to memorize these definitions is to sit down with a partner and verbally ask one another the definition of each term on this list. Once you can repeat the definitions three times quickly and without making a mistake, you can go on to the next one on the list until all of them are memorized. Some of these definitions pertain to the earlier chapters (like the definitions of philosophy and logic), while others pertain to the later chapters (such as the definition of demonstration).

Philosophy (ch. 2): An account of the ultimate causes of reality according to reason.

Truth (ch. 8): The conformance of the mind to reality.

Art (ch. 4): A fixed and definite method established by reason by which human acts reach their due ends by appropriate means.

Logic (ch. 4): The art of reasoning well. (nominal)
The art of habitually reasoning to true conclusions from true premises. (essential)

Speech (ch. 7): Vocal sound which signifies by convention.

Genus (ch. 7): A name used univocally, said of many things different in kind, signifying what they are.

Species (ch. 7): A name used univocally said of many things which differ only as individuals, but are of the same kind; or a name signifying a particular kind of thing within a genus.

Difference (ch. 7): A name used univocally, said of many things, signifying how they are what they are.

Property (ch. 7): A name used univocally which signifies something necessarily following from what a thing is.

Accident (ch. 7): A being which exists in another, not through itself. (accident vs. substance) A name used univocally which signifies that which happens to belong to a thing, but does not follow from what the thing is. (accident vs. property)

- Definition (ch. 7):** Speech signifying distinctly what a thing is.
- Name (ch. 7):** Speech having no part which signifies by itself.
- Statement (ch. 8):** Speech signifying the true or the false.
- Reasoning (ch. 6):** Coming to know or guess a statement from other statements and because of them.
- Argument (ch. 6):** Speech bringing together the statements from which we reason.
- Example (ch. 9):** An argument from one singular to another singular of the same kind.
- Induction (ch. 10):** An argument which leads from many particulars to a universal.
- Enthymeme (ch. 9):** An argument from likelihood or signs.
- Syllogism (ch. 9):** Speech in which some statements having been set down another statement follows necessarily because of them.
- Demonstration (ch. 10):** A syllogism causing someone to know a conclusion perfectly.
- Reason (ch. 3):** The part of man's soul which allows him to understand what is true or false.
- Will (ch. 3):** The part of man's soul which allows him to choose what is good or evil.
- Form (ch. 7):** That cause which makes a thing to be what it is.

Chapter 1

CHAPTER 1 IS A VERY brief history of the beginnings of philosophy. It begins with an explanation of what conditions were necessary before philosophy could begin and what motivated the first philosophers.

Questions about Chapter 1

Why was some kind of leisure necessary as a condition before philosophy could begin in earnest?

Why is wonder at the beginning of philosophy?

What is the difference between poetic myth and philosophy?

What group is widely regarded as the first true philosophers? What were they seeking in their philosophy?

Were the early philosophers all in fundamental disagreement, or were there some areas of fundamental agreement?

Is a history of philosophy and philosophers the same thing as doing philosophy?

What is the reason for examining the teachings of a few of the early philosophers in a brief history of philosophy before defining philosophy?

Chapter 2

CHAPTER 2 FORMULATES A DEFINITION of philosophy: an account (that is, a setting in order) of the ultimate causes of reality according to reason. In light of that definition, the chapter addresses some objections to and misconceptions about philosophy.

Questions about Chapter 2

What is the difference between philosophy and science (especially the so-called experimental sciences)? Is there some sense in which philosophy can also be called a science?

Answer this objection: Philosophers always disagree while scientists always agree, therefore, philosophy cannot be a science or arrive at certain truth.

Answer this objection: Philosophy is based upon each person's experience, but each person's experience is merely subjective. Therefore, philosophy is merely subjective.

What are some reasons why we should expect more disagreement among philosophers than among scientists?

Is it possible to arrive at certain truth through philosophy?

Given the definition of philosophy, is mathematics somehow included as a part of philosophy?

What is the difference between philosophy and theology?

Given that philosophy involves setting ultimate causes in order, where would one expect to find philosophers disagreeing?

Given the definition of philosophy, can anyone with the use of reason really live without philosophizing?

Chapter 3

CHAPTER 3 GIVES AN OVERVIEW of all the branches of knowledge and shows their mutual relationships to each other. More particularly, it gives the divisions of the various branches of knowledge and explains why each branch is distinct from the others. This prepares the student to see how the various disciplines he will study this year (logic, natural philosophy, ethics) are related to one another.

Questions about Chapter 3

Given the definition of philosophy, why should it belong to philosophy to give a universal roadmap to all things knowable? For example, why shouldn't the mathematician or the chemist consider the whole body of knowledge?

Why is it that everything that can be known has some order? What is the relation of this order to philosophy? (Hint: consider the definition of philosophy.)

What two things are necessary for something to be known?

What are the three types of order with respect to reason?

What makes a speculative science different from a practical science? That is, what is the end (or purpose) of each?

Rather than an insult, why is it a compliment to say that speculative science is “useless”?

Which kind of knowledge is better: speculative or practical? Why? Which one does logic primarily aim at?

What are the divisions of the speculative sciences?

What are the types of the practical sciences?

Does speculative science depend upon practical science, or is it the other way around?

Where on this map would sciences like physics, biology, and chemistry fall?

Where would arts like carpentry and painting fall?

What does logic order in man? What does ethics order in man?

Chapter 4

CHAPTER 4 GIVES THE DEFINITION of logic and explains the relationship of logic to the other arts. It also explains what kind of knowledge logic helps us to acquire. Finally, this chapter explains why some statements are known through themselves (as opposed to being known through an argument).

Questions about Chapter 4

What is art?

Why are there two definitions of logic? How are they different?

Why is logic called the “art of arts”?

Why is art proper to rational beings? Why doesn't the fact that animals build things like nests and webs mean that they also have some kind of art?

What are the two types of knowledge? Of these two types of knowledge, which one does logic strengthen?

If logic puts order into the acts of reason, what does this imply about when logic should be studied? For example, should logic be studied at the beginning, in the middle, or at the end of philosophy?

How do we reason; that is, what do we reason from and what do we reason to? What are their names?

Must all truths be proven by an argument? Why or why not?

What are “self-evident truths”? Why must they exist?

Chapter 5

CHAPTER 5 CONSIDERS WHETHER LOGIC is really necessary, or if it is even possible. These questions must be addressed before beginning logic since, if logic is unnecessary, it will be useless to study it, and if logic is impossible, it will be a waste of time to study it. First, the chapter raises some difficulties to the need for logic (for example, the fact that most people can live their lives well without it). The text then answers these difficulties. Next, the text gives two objections why logic seems impossible.

Questions about Chapter 5

Is logic necessary to know everything? For example, it is necessary to sense colors, or to know that $1+1 = 2$?

Is logic necessary to be a good painter or sculptor?

Is logic possible? How?

Other than the fallacy of equivocation, what are some other common kinds of mistakes that people often make when reasoning about difficult matters?

Answers to Questions in Chapter 5

The text also provides two questions for which it does not give answers. I will provide a brief answer to these two questions here. The two questions are:

What is the difficulty Socrates presents in the *Meno* with trying to discover something which you do not know? What is the solution to this difficulty?

The difficulty of Socrates in the *Meno* can be summed up in the following argument:

Either (a) you come to know what you already know or (b) you come to know what you do not know. But you cannot come to know what you already know any more than you can come to own what you already own. So (a) seems false. And you cannot come to know what you in no way know, since if you did, you would be getting something from nothing. So (b) seems false. Therefore, since (a) and (b) seem to be the only two options for coming to know, and both are impossible, it seems that it is impossible to come to know anything.

The answer is that there is a middle ground between knowing actually and not knowing in any way. This middle ground is knowing potentially. Take a simple example: We say that if you know the sides of a rectangle, you know its area. But what we really mean is that if you actually know the sides of a rectangle, you are *able to* know its area (this becomes clear if the numbers expressing the length for each side of the rectangle are very large numbers). So between options (a) and (b), there is a third option: (c) you come to actually know from what you potentially know.